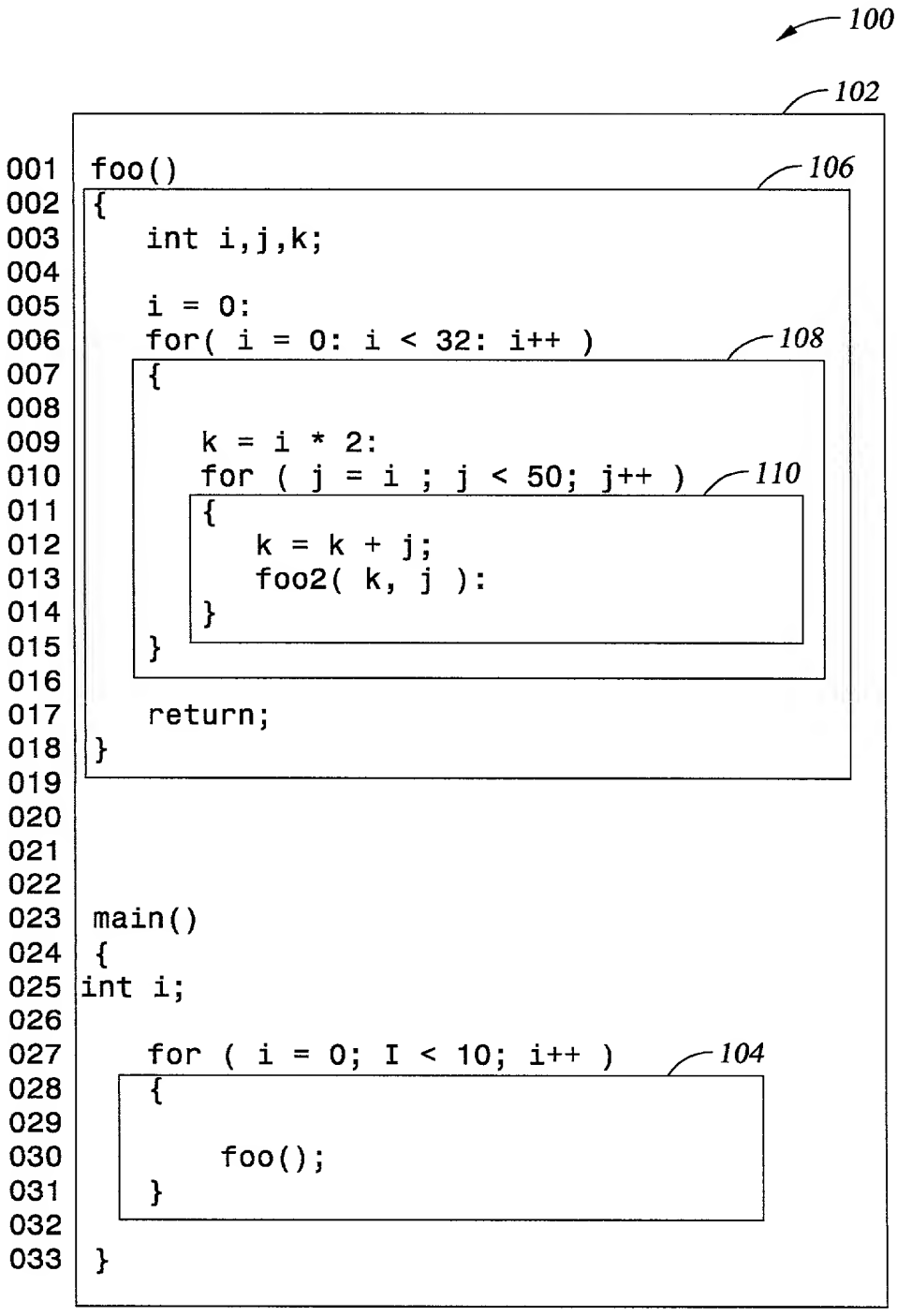
100
102
106
108
110
104
001 foo()
002 {
003 int i,j,k;
004
005 i = 0:
006 for(i = 0: i < 32: i++)
007 {
008
009 k = i * 2:
010 for (j = i ; j < 50; j++)
011 {
012 k = k + j;
013 foo2(k, j):
014 }
015 }
016
017 return;
018 }
019
020
021
022
023 main()
024 {
025 int i;
026
027 for (i = 0; I < 10; i++)
028 {
029
030 foo();
031 }
032
033 }

Fig. 1

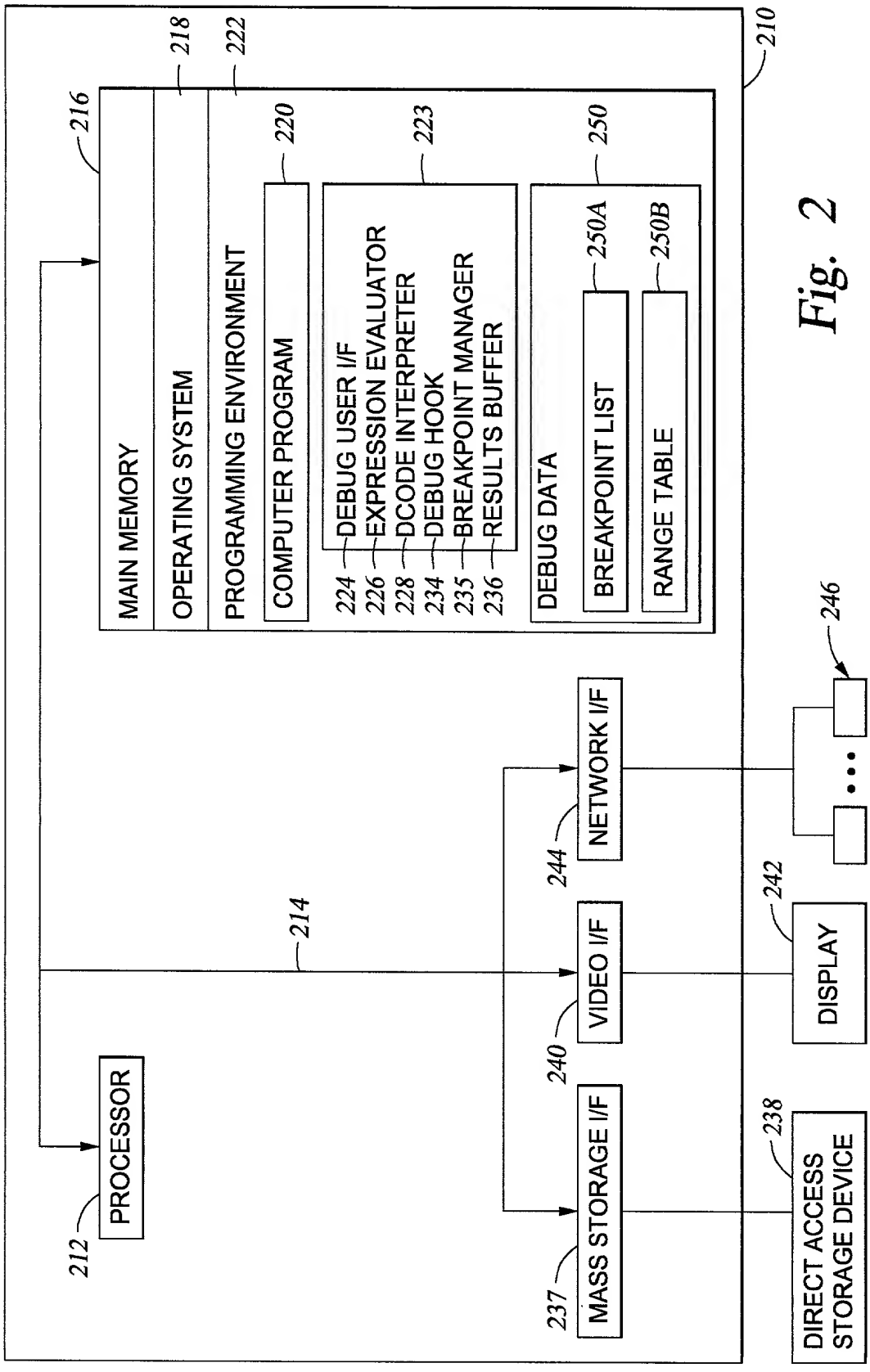
210
MAIN MEMORY
216
OPERATING SYSTEM
218
PROGRAMMING ENVIRONMENT
222
COMPUTER PROGRAM
220
DEBUG USER I/F
224
EXPRESSION EVALUATOR
226
DCODE INTERPRETER
228
DEBUG HOOK
234
BREAKPOINT MANAGER
235
RESULTS BUFFER
236
223
DEBUG DATA
250
BREAKPOINT LIST
250A
RANGE TABLE
250B
PROCESSOR
212
214
NETWORK I/F
244
VIDEO I/F
240
MASS STORAGE I/F
237
DISPLAY
242
DIRECT ACCESS STORAGE DEVICE
238
246

Fig. 2

250A

RANGE TABLE

	302 START LINE	304 END LINE	306 ENTRY POS	308 RANGE ID
310A	2	18	2	1
310B	7	15	6	2
310C	11	14	10	3
310D	001	033	024	4
310E	028	031	027	5

Fig. 3

T09260 "Express Mail Label No. EL913563472US"

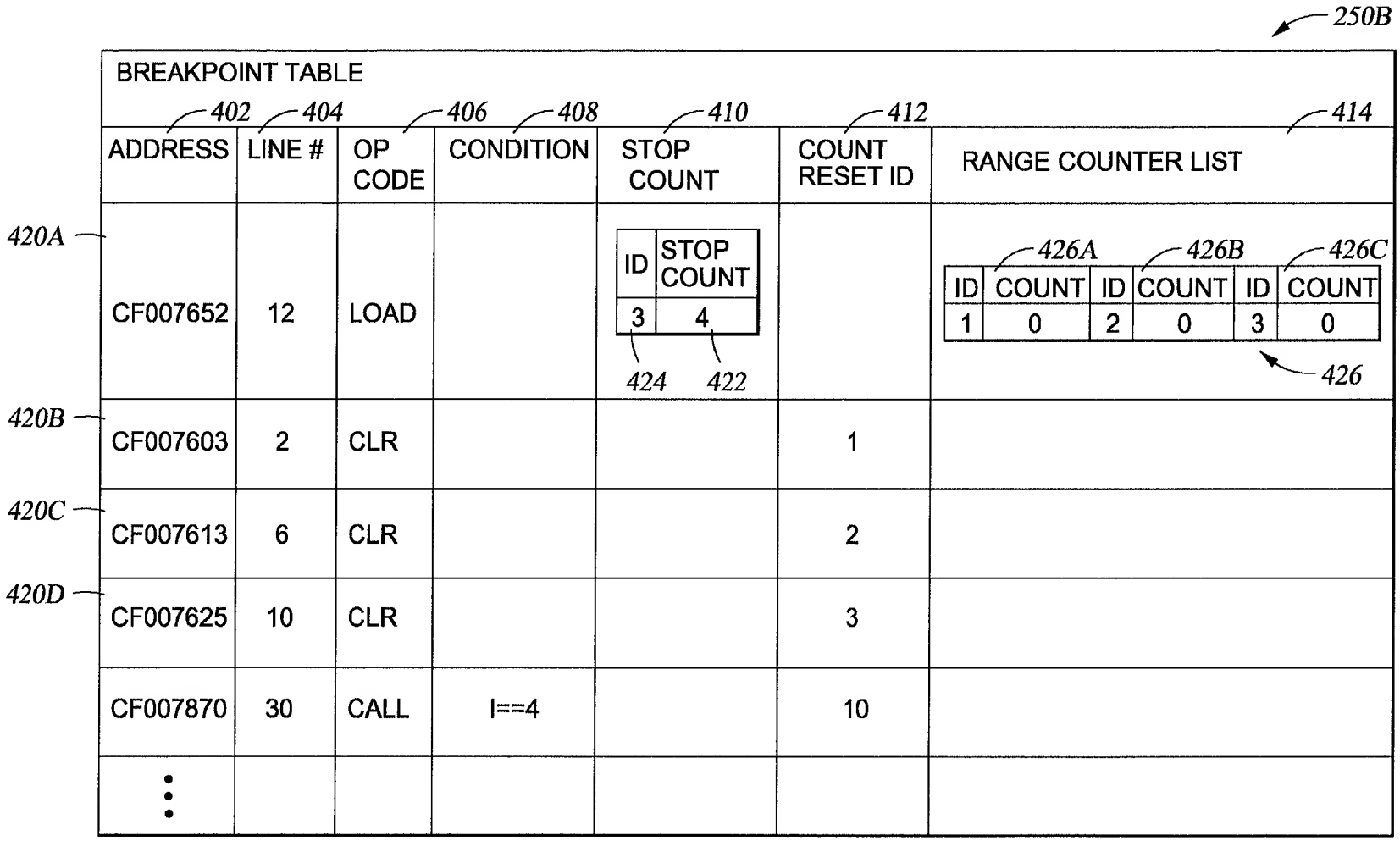

Fig. 4

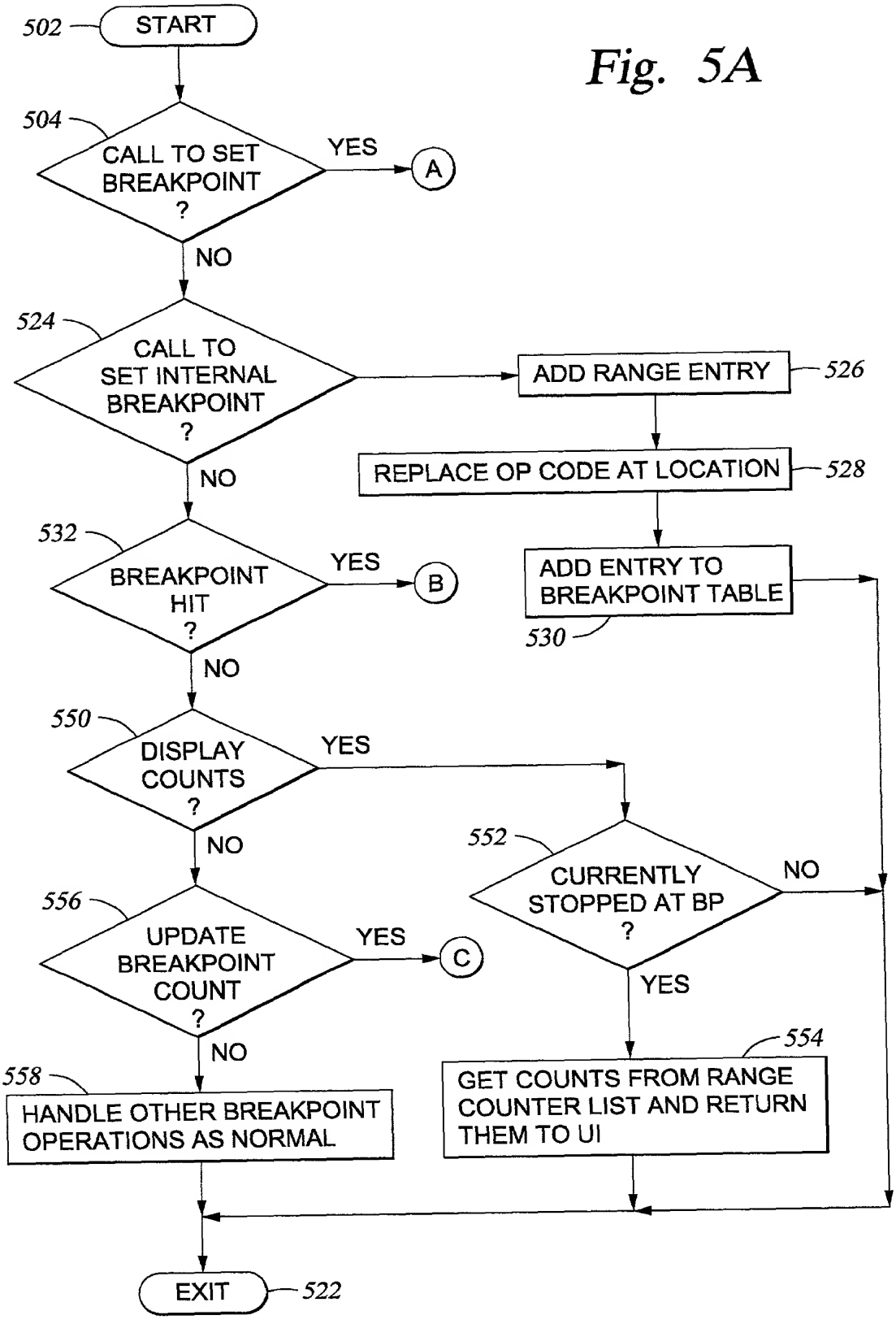
502
START
504
CALL TO SET BREAKPOINT ?
YES
A
NO
524
CALL TO SET INTERNAL BREAKPOINT ?
ADD RANGE ENTRY
526
REPLACE OP CODE AT LOCATION
528
NO
532
BREAKPOINT HIT ?
YES
B
ADD ENTRY TO BREAKPOINT TABLE
530
NO
550
DISPLAY COUNTS ?
YES
NO
552
CURRENTLY STOPPED AT BP ?
NO
YES
556
UPDATE BREAKPOINT COUNT ?
YES
C
NO
554
GET COUNTS FROM RANGE COUNTER LIST AND RETURN THEM TO UI
558
HANDLE OTHER BREAKPOINT OPERATIONS AS NORMAL
EXIT
522

Fig. 5A

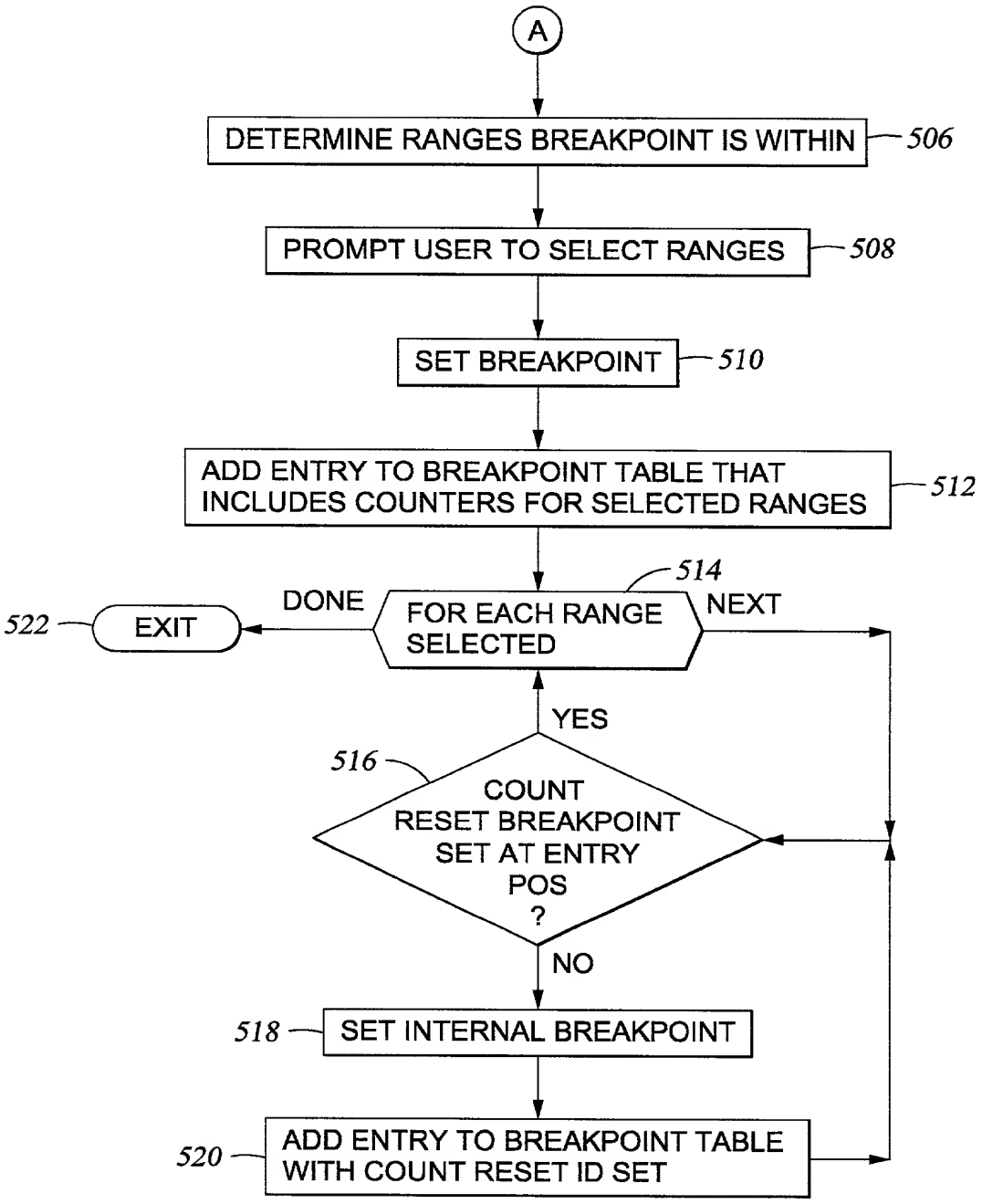
A
DETERMINE RANGES BREAKPOINT IS WITHIN
506
PROMPT USER TO SELECT RANGES
508
SET BREAKPOINT
510
ADD ENTRY TO BREAKPOINT TABLE THAT INCLUDES COUNTERS FOR SELECTED RANGES
512
514
DONE
FOR EACH RANGE SELECTED
NEXT
522
EXIT
YES
516
COUNT RESET BREAKPOINT SET AT ENTRY POS ?
NO
518
SET INTERNAL BREAKPOINT
520
ADD ENTRY TO BREAKPOINT TABLE WITH COUNT RESET ID SET

Fig. 5B

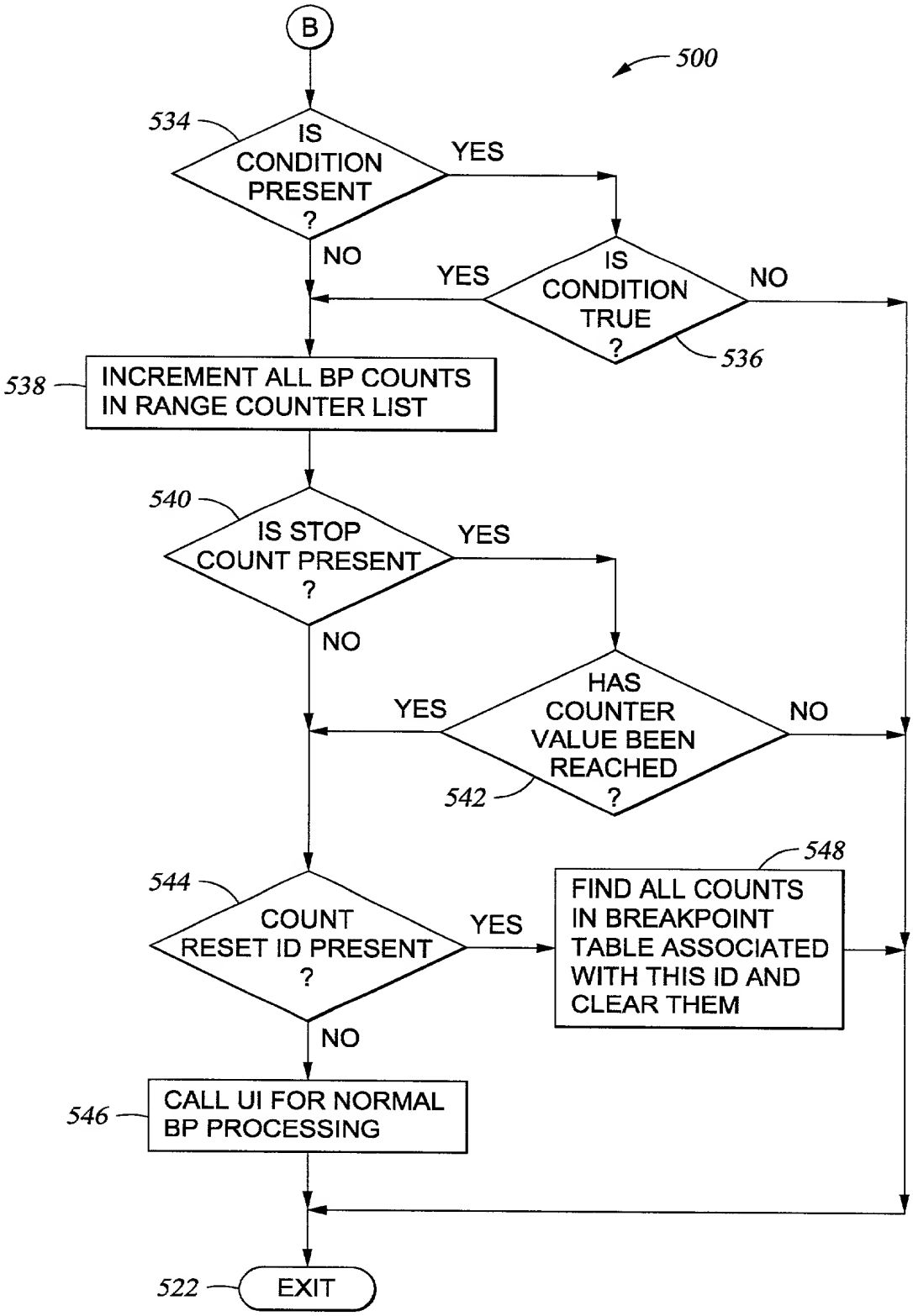
B
500
534
IS CONDITION PRESENT ?
YES
NO
YES
IS CONDITION TRUE ?
NO
536
538
INCREMENT ALL BP COUNTS IN RANGE COUNTER LIST
540
IS STOP COUNT PRESENT ?
YES
NO
YES
HAS COUNTER VALUE BEEN REACHED ?
NO
542
544
COUNT RESET ID PRESENT ?
YES
548
FIND ALL COUNTS IN BREAKPOINT TABLE ASSOCIATED WITH THIS ID AND CLEAR THEM
NO
546
CALL UI FOR NORMAL BP PROCESSING
522
EXIT

Fig. 5C

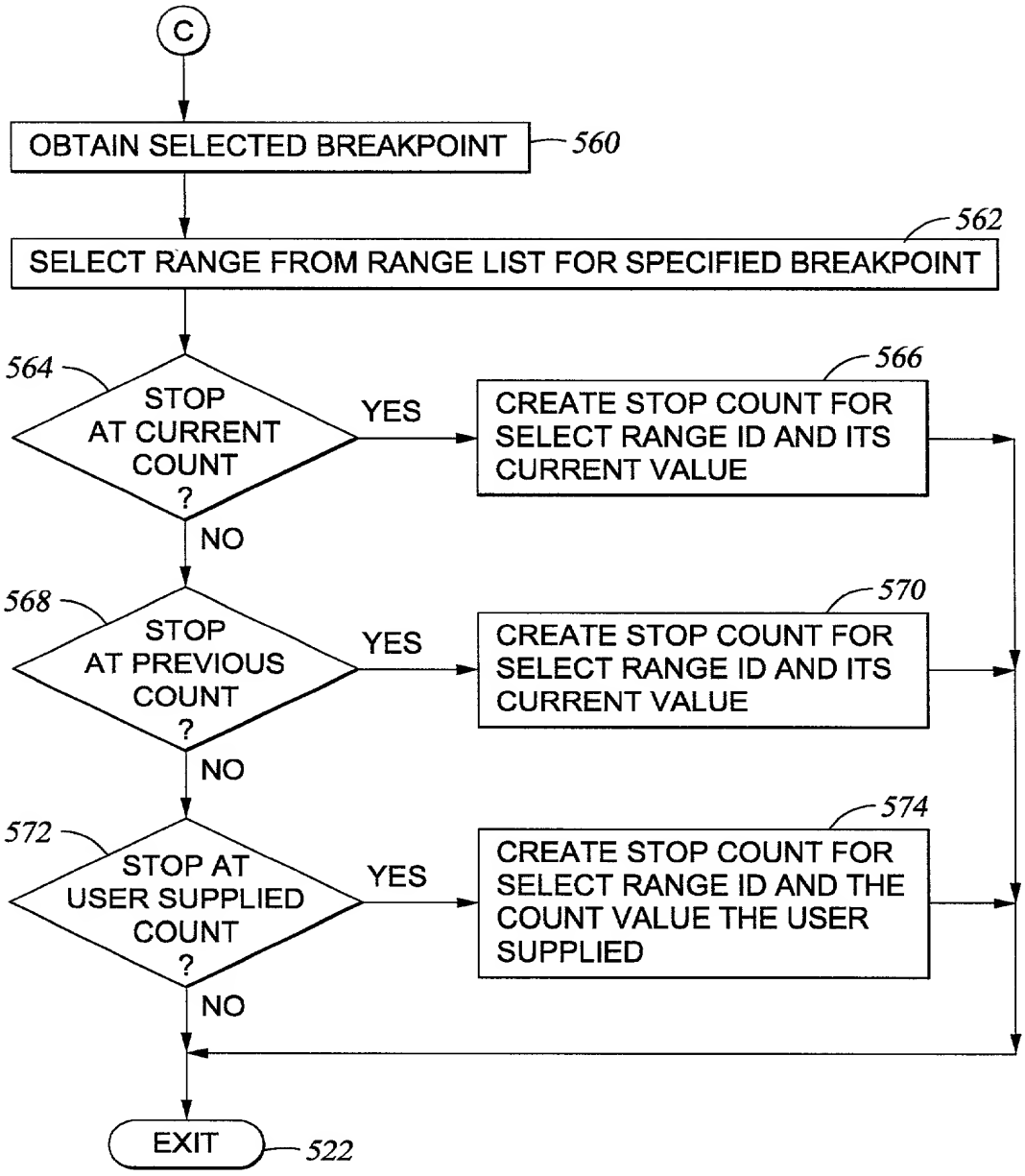
C
OBTAIN SELECTED BREAKPOINT
560
SELECT RANGE FROM RANGE LIST FOR SPECIFIED BREAKPOINT
562
564
STOP AT CURRENT COUNT ?
YES
566
CREATE STOP COUNT FOR SELECT RANGE ID AND ITS CURRENT VALUE
NO
568
STOP AT PREVIOUS COUNT ?
YES
570
CREATE STOP COUNT FOR SELECT RANGE ID AND ITS CURRENT VALUE
NO
572
STOP AT USER SUPPLIED COUNT ?
YES
574
CREATE STOP COUNT FOR SELECT RANGE ID AND THE COUNT VALUE THE USER SUPPLIED
NO
EXIT
522

Fig. 5D